Remarks:

This paper is submitted with a RCE filed herewith in reply to the Final Rejection. After entry of this response, claims 39 – 72 are pending. Claims 39, 58, and 65 – 72 are herby amended. No new matter has been added. Claim 65 has been amended to address the 112 rejection in the Office Action. In particular, "first fibre" was added in front of "thermoplast" to provide antecedent basis for "the first fibre." Also, Applicants delete the second recitation of the weight percentage.

Claims 39, 58, 65 – 72 have been amended to recite a "thermoplastic" composite. The Applicants' claimed embodiments can be made of only three main components: a first fibre made of a thermoplast which builds a composite matrix after melting; a second reinforcing fibre, and a binder adapted to bond the first fibre and the second fibre merely at the intersection or contact points before melting of the first fibre thermoplast. After melting of the thermoplast, a thermoplast matrix with the incorporated reinforcing fibre results. In other words, there is no longer a first fibre per se after melting as it completely melts to form the thermoplast composite matrix.

Unlike the Applicants' embodiments, Chenoweth's final product is a **thermoset** mat with a thermosetting resin and three fibers: reinforcing glass fibers and two kinds of synthetic fibers (fiber 14, core of bi-component fiber 16). Indeed, a thermosetting resin would not be suitable in the claimed embodiments, because a thermosetting resin would not resist high temperatures needed for preparing the fibre composite as the thermosetting resin would not melt but would decompose above its decomposition temperature turning into ash. According to Chenoweth, the bi-component fiber (16) comprises a polyester high melting core (18) and a polyester low melting sheath (20). Chenoweth does not distinguish whether the polyester sheath is a thermoplastic polymer or a thermosetting polymer. The polymer sheath is capable of melting or curing between 260°F and 300°F, and has a lower melt temperature than the thermosetting resin (300°F – 500°F) and the fiber 14 and core of fiber 16 (50°F higher than the thermosetting resin).

Applicants agree with the Examiner that Chenoweth teaches a reinforcing fibre and a synthetic fiber 14 that can be understood as the first fibre of the claimed embodiment, though it does not teach a "first fibre thermoplast" as claimed. According to Fig. 6 of Chenoweth,

the final product is shown have two discrete bonds between the fibers. The first bond 34 is built of the thermosetting resin only, which bonds for example two fibers 14 or a fiber 14 and a fiber 12, (col. 6, lines 62-65). The second bond 34a is shown in Fig. 6 is built of the sheath of the bi-component fiber reinforced by the thermosetting resin, (col. 7, lines 1-6). Thus, after curing of the thermosetting resin, a matrix with all three fibers bonding to one another with the two bonds results. In other words, unlike the Applicants' embodiments where the first fibre completely melts away to form the thermoplast composite matrix, the Chenoweth product includes the reinforcing fiber, the core of the bi-component fiber, the synthetic fiber, and the two discrete bonds, which is shown in the figures. As a result, the Applicants have found a novel and inventive nonwoven mat and a method of producing such mat that clearly has less components and less processes than Chenoweth.

The independent claims also recite "the fibre length of the first fibre being smaller than that of the reinforcing fibre." Paragraphs [0008] – [0009] of Applicants' published application indicates that "it is essential that, in the nonwoven mat, the melt fibres have a smaller fibre length than the reinforcing fibre" to arrive at "a homogeneous mixing of the two types of fibre" so that, in the case of subsequent further processing of the intermediate product, a uniform homogeneous distribution of the reinforcing fibre in the fibre composite is then achieved." In other words, Applicants have found that a homogenous distribution of each of the fibres in an intermediate product, in order to achieve the thermoplast matrix in a final product with the desired structural properties and dimensions, can only be achieved when the first, thermoplast fibres are smaller than the reinforcing fibres.

The Examiner agrees that Chenoweth is silent as to any requirement of the comparative length of the first, glass fibers in relation to the second, homogenous fibers or the third, bi-component fibers. (See page 5 of the Final Rejection). According to Chenoweth, the glass fibers has a length between ¼ inch or less to 4 inches (6.3 mm – 102 mm), while the synthetic fibers are approximately ¼ inches to 4 inches (6.3 mm – 102 mm). Further, Chenoweth describes that the loft/density of the blanket may be readily adjusted by the selection of the length of the synthetic fibers. (See col. 5, lines 1-3). Longer synthetic fibers (1-4 inches) provide more loft, while shorter synthetic fibers (1/4 – 1 inches) provide less loft and greater density. (See col. 5, lines 4-10). This only suggests that a particular

length of synthetic fiber can affect the loft of the blanket. It does not compare the length of the reinforcing fiber with the other fibers. Chenoweth may even suggest the opposite of having reinforcing fibers smaller than the synthetic fibers when is describes that the glass fibers have a length of "¼ inch or less to 4 inches" and the synthetic fibers have a length of "approximately ¼ inches to 4 inches." Chenoweth does not include "less" in the description of the length of the synthetic fibers. Thus, Chenoweth does not encompass the claimed limitation of having the first fibres smaller than the reinforcing fibres.

Yokoo, paragraph [0023], describes a sheet having only one type of impregnated strand, where each of the strands is chopped to a predetermined length ranging from 10 to 150 mm. Yokoo further discloses disadvantages for having a strand length of less than 10 mm in the next paragraph. Consequently, Chenoweth and Yokoo do not disclose any fibre length selection criterion whatsoever that would lead one of ordinary skill in the art to this aspect of the Applicants' claimed invention. Moreover, the combination of Chenoweth and Yokoo would only lead to a resin sheet having the thermosplastic resins of Yokoo and the bi-component fiber, glass fiber, synthetic fiber and the thermosetting resin of Chenoweth. Besides the difficulty in applying a high temperature to melt the thermoplastic resin of Yokoo without decomposing the thermosetting resin of Chenoweth, each of the different kinds of fibers from the references with a different function as the Applicants' embodiments are combined with a completely different thermoplastic resin than the Applicants' first fibre thermoplast.

Nevertheless, to advance prosecution Applicants have amended Claim 39 with the subject matter of Claims 40 and 43 to better define the lengths of the fibres, and accordingly cancel Claims 40, 42 and 43. The amended claim now recites that the first fibre length is between 0.1 mm and 6 mm, and the reinforcing fibre length is between 6 mm and 30 mm.

To conclude, Applicants' claims are believed to be patentable over the art of record. Should the Examiner feel that some minor change to the claims, which could be addressed by an Examiner's amendment, would place this case in condition for allowance, the subscribing attorney would welcome a phone conference.

Respectfully submitted,

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